

From the INTERNATIONAL BUREAU

PCT**NOTIFICATION CONCERNING
TRANSMITTAL OF COPY OF INTERNATIONAL
PRELIMINARY REPORT ON PATENTABILITY
(CHAPTER I OF THE PATENT COOPERATION
TREATY)**

(PCT Rule 44bis.1(c))

To:

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ETATS-UNIS D'AMERIQUE

Date of mailing (<i>day/month/year</i>) 02 March 2006 (02.03.2006)		
Applicant's or agent's file reference IRDM.029HPC		IMPORTANT NOTICE
International application No. PCT/US2004/026458	International filing date (<i>day/month/year</i>) 12 August 2004 (12.08.2004)	Priority date (<i>day/month/year</i>) 19 August 2003 (19.08.2003)
Applicant IDC, LLC et al		

The International Bureau transmits herewith a copy of the international preliminary report on patentability (Chapter I of the Patent Cooperation Treaty)

The International Bureau of WIPO
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Authorized officer

Dorothee Mülhausen

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference IRDM.029HPC	FOR FURTHER ACTION		See item 4 below
International application No. PCT/US2004/026458	International filing date (<i>day/month/year</i>) 12 August 2004 (12.08.2004)	Priority date (<i>day/month/year</i>) 19 August 2003 (19.08.2003)	
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237			
Applicant IDC, LLC			

1.	This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 bis.1(a).		
2.	This REPORT consists of a total of 7 sheets, including this cover sheet.		
	In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.		
3.	This report contains indications relating to the following items:		
	<input checked="" type="checkbox"/>	Box No. I	Basis of the report
	<input checked="" type="checkbox"/>	Box No. II	Priority
	<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
	<input type="checkbox"/>	Box No. IV	Lack of unity of invention
	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
	<input type="checkbox"/>	Box No. VI	Certain documents cited
	<input type="checkbox"/>	Box No. VII	Certain defects in the international application
	<input type="checkbox"/>	Box No. VIII	Certain observations on the international application
4.	The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).		

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Date of issuance of this report 21 February 2006 (21.02.2006)
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PATENT COOPERATION TREATY

REC'D 24 NOV 2004

From the
INTERNATIONAL SEARCHING AUTHORITY

WIPO

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To:

see form PCT/ISA/220

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing

(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION

See paragraph 2 below

International application No.
PCT/US2004/026458

International filing date (day/month/year)
12.08.2004

Priority date (day/month/year)
19.08.2003

International Patent Classification (IPC) or both national classification and IPC
G02B26/00, G01J3/26

Applicant
IRIDIGM DISPLAY CORPORATION

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/US2004/026458

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ in written format
 - ☐ in computer readable form
 - c. time of filing/furnishing:
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/US2004/026458

Box No. II Priority

1. ☒ The following document has not been furnished:

☒ copy of the earlier application whose priority has been claimed (Rule 43bis.1 and 66.7(a)).

☐ translation of the earlier application whose priority has been claimed (Rule 43bis.1 and 66.7(b)).

Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43bis.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.

3. Additional observations, if necessary:

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	5,8-10,16-33
	No: Claims	1-4,6,7,11-15
Inventive step (IS)	Yes: Claims	16-33
	No: Claims	1-15
Industrial applicability (IA)	Yes: Claims	1-33
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Reference is made to the following documents :

D1: US-A-2002015215

D2: US-A-5835255

D3: US-A-6055090

2.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT.

2.2 The document D1 discloses (figure 1B ; the references in parentheses applying to this document) a light modulator, comprising:

a mirror (100) having first and second surfaces suspended over a cavity arranged under the first surface;

supports (tethers 102) attached to the second surface of the mirror;

support posts (104) suspending the mirror over the cavity by the supports, the support posts and supports being formed from a same layer of material (see figure 7A for instance); and

an electrode (bottom electrode 504, see figure 5A) and an optical stack (comprising layer 502 and substrate) positioned opposite the first surface across the cavity from the mirror such that activation of the electrode causes the mirror to move towards the electrode (see figures 5A and 5B), changing dimension and interference properties of the cavity.

2.3 Hence the subject-matter of claim 1 is not new (Article 33(2) PCT).

2.4 The applicant should be aware that the subject-matter of claim 1 is also not new with respect to document D2 (figure 28A) and document D3 (figure 9).

3. The subject-matter of independent product claim 6 is not new (Article 33(2) PCT), because document D2 (figure 20B) discloses a light modulator, comprising in particular, support posts (504) suspending the mirror over the cavity by the supports, the support posts having support post plugs;

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING
AUTHORITY (SEPARATE SHEET)**

International application No.

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4. The subject-matter of independent product claim 11 is not new (Article 33(2) PCT), because document D1 (figure 4C, for instance) discloses a light modulator, comprising in particular, a bus structure attached to the support posts adjacent to the second surface of the mirror.
5. The subject-matter of independent product claim 15 is not new (Article 33(2) PCT), because document D3 (figure 9) discloses an array of light modulators, comprising at least three modulators arranged so as to form one resulting picture element; each modulator comprising a mirror suspended over a cavity by supports, the supports formed such that each modulator corresponding to each color assumes a quiescent state corresponding to a cavity with a different dimension (see column 4, lines 25-29).
6. The additional features of dependent product claims 2-5, 7-10, 12-14 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty or inventive step, the reasons being as follows:
 - 6.1 The additional features of dependent device claims 2-4 and 12-14 are disclosed in document D1 (see paragraph [0041], in particular). The subject-matter of claims 2-4 and 12-14 is therefore not new (Article 33(2) PCT).
 - 6.2 The additional feature of claim 5 does not appear to involve any further inventive step. Hence the subject-matter of claim 5 lacks an inventive step (Article 33(3) PCT).
 - 6.3 Document D2 discloses a bus structure attached to the support posts adjacent to the second surface of the mirror (figure 20B). Hence the subject-matter of claim 7 is not new (Article 33(2) PCT).
 - 6.4 The additional features of claims 8-10 are disclosed in D1 (paragraph [0041]). The subject-matter of claims 8-10 lacks therefore an inventive step (Article 33(3) PCT).
- 7.1 Independent method claims 16, 23 and 30 appear to be new and inventive (Article 33(2) and (3) PCT).

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING
AUTHORITY (SEPARATE SHEET)**

International application No.

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- 7.2 Document D3, which is considered to represent the most relevant state of the art, discloses (figures 10a to 10d and 11a to 11d) a method of manufacturing a light modulator, from which the subject-matter of claim 16 differs in :
- depositing a second sacrificial layer upon the mirrors;
 - using a planarization layer to form support post plugs;
 - depositing a flexible layer on the support post plugs and forming attachments between the flexible layer and the mirror ;
- 7.3 The subject-matter of claim 16 is therefore novel (Article 33(2) PCT).
- 7.4 The problem to be solved by the present invention may therefore be regarded as how to manufacture better light modulator, in preventing degradation of the interference properties of the cavity around the edges of the observed pixels (see description page 5, lines 8-12). The solution to this problem proposed in claim 16 of the present application is considered as involving an inventive step (Article 33(3) PCT).
8. Independent method claims 23 and 30 are also new and inventive (Article 33(2) and (3) PCT) for the reason given in paragraph 7.2 to 7.4, *mutatis mutandis*.
9. Claims 17-22, 24-29, 31-33 are dependent on claims 16, 23 or 30 and as such also meet the requirements of the PCT with respect to novelty and inventive step (Article 33(2) and (3) PCT).